Survey

European perspectives on industrial biotechnology

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Survey: European perspectives on industrial biotechnology

The European Forum for Industrial Bitochnology, to be held from October 20–22, 2009, in Lisbon, Portugal, assembled some of its planned panelists to offer some of their views about the industrial biotechnology landscape in Europe.

Lene Lange, DSc, PhD
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WHAT IS "THE PROMISE" OF BIOTECHNOLOGY?

Biotechnology is the basic tool set for development of alternative biological solutions to important problems. Biological solutions can be developed for a wide range of products, processes, and materials in almost all segments of our industrial society. The greatest potential of biotechnology is to substitute (or partially substitute) the spectrum of products, process ingredients, and materials, that we currently get from fossil resources (oil and natural gas). This means not only biofuel (which basically is a bulk and low-value product) but also includes biochemicals, medicines, biofertilizers, biopesticides, bioplastics, et cetera.

WHAT DO YOU SEE AS THE CURRENT BARRIERS TO DELIVERING ON THIS?

Market forces are basically the only drivers in Europe—and market forces are insufficient to drive introduction of new technologies with the necessary pace for the initial phase. We are in a situation where the framework, the conditions, for current technologies provide instead a more favorable position for the continued use of conventional techniques that draw on fossil resources. Thus, the most serious barrier in Europe is the shortcoming of clear political goal-setting, introduction of incentive structures favoring sustainable solutions, and establishment of a focused knowledge loop that links academia, industrial R&D, regulatory bodies, and end users.

WHAT TECHNICAL BREAKTHROUGHS ARE REQUIRED TO CREATE MASS ADOPTION IN INDUSTRY?

This question cannot be answered with a general one-liner. The most crucial technological breakthroughs differ from sector to sector; however, development of efficient technologies for biorefineries are essential, such as improved biomass conversion and microbial production organisms, and synthetic biology, to make possible, in an industrial setting, microbial processes that have not been developed under natural evolutionary conditions.

HOW CAN ACADEMIA & INDUSTRY COLLABORATE MORE CLOSELY TO ACHIEVE THIS?

Firstly, academia must better coordinate among the different disciplines: plant biology, microbiology, molecular biology, and biochemistry, physics, and nanotechnology. Further, the basic natural science approach must collaborate closely with those groups that are adopting an engineering approach in their research.

Secondly, academia should make it more prestigious to conduct excellent and innovative research, to encourage contributions of new knowledge that can provide the basis for new solutions.

Thirdly, the public funding structure must underpin and support collaboration between academia and industry. The model of the Department of Energy in the US is exemplary in this respect. Also, the approach of having several groups working on the same problem, competing for the best solutions, is an important model for practice in Europe.

The demand for new and more sustainable solutions is so vast that we will need many solutions within each segment, to be applied in the different industrial settings, such as stand-alone plants, add-on plants, remotely located plants, and so forth.

Niklas von Weymarn, PhD
Program Manager, Biorefineries
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WHAT SHOULD EVERY CHEMICAL BUSINESS KNOW ABOUT INDUSTRIAL BIOTECHNOLOGY?

Purely technically speaking, chemical companies should be aware of the possibilities and limitations that biotechnology in industrial processing is presenting. Biotechnology can be a competitive edge. Chemical businesses should also understand that industrial biotechnology is an established undertaking, with a more than 100-year-old industrial track record. In a world where green values are increas-